

Central Coast Groundfish Species and Fillet Identification Manual

An Introduction to Saltwater Fishing in  
San Luis Obispo County

A Senior Project

presented to

the Faculty of the Agricultural Education and Communication Department

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Bachelor of Science

by

Robbie Milla

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## **Abstract**

The purpose of this project was to create a manual that would aid fishermen and fish consumers in the successful identification of various groundfish species and their fillets. The manual was crafted with quality photographs to give the viewer a vivid depiction of the targeted groundfish species. The images were taken to specifically target the identification characteristics of each fish species. It was the hope of the author to educate anyone who was interested in the groundfish fishery. The manual includes: basic groundfish regulations, groundfish species identification, and groundfish fillet identification.

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## **Chapter One**

### **Introduction**

Many individuals use fish as their main source of protein, around 3 billion people (Asche, 2012, pg. 1). Fish is also growing more and more popular due to its plethora of health benefits. In one article, it was discussed how the omega-3 fatty acids, found in fish, can actually enhance cognitive development in young children (Jeffrey, 2013, pg. 3). These health benefits greatly increase the demand for fish. Fishing is a major contributor to the global economy.

The California Groundfish Fishery is a major commercial fishing industry that provides fish for both local and global economies. It is important to the overall economic well-being of our country, so it is often managed by federal authorities (Alaska Department of Fish and Game). All Central Coast restaurants who advertise “fresh local fish” depend on this commercial fishery, and many small communities depend on the fishing industry to boost their local economy. Without the constant influx of fresh fish, these restaurants would have to find another way to acquire their product.

What many people do not realize is that both commercial fishing and recreational fishing are major contributors to the economy. The difference between commercial and recreation fisherman is that recreational fisherman do not sell their fish. Recreational fishermen flock to fishing destinations by the thousands and can be a major source of income to local businesses. They pump large amounts of money into the economy in pursuit of a trophy class fish. However, most of the big money is invested into the actual consumption of fish products, especially overseas.

## **Statement of the Problem**

A huge majority of the population who consume fish do not understand what they are eating. To be specific, they could not actually identify what species of fish they are eating. This then leads to consumer ignorance and leaves them vulnerable to purchasing mislabeled fish at fish markets. Most fish are labeled correctly, but the mislabeling of certain species is becoming a major problem for the fish industry. Some fish meat can be incredibly difficult to identify because a lot of the meat looks the same. However, some meat can be easily identified by texture, size, shape, and even color. The consumer needs to become educated on how to identify the fish that they are eating. Once a general fish identification skill set has been learned, consumers will then be able to identify the fish for themselves and no longer worry about purchasing or consuming mislabeled products.

## **Importance of the Project**

It is important to help educate fish consumers on proper fish species and fillet identification. This project will also assist the fishing industry by helping to restore credibility to the proper labeling of fish. The most important outcome of the project will be to boost fish consumers' confidence in their ability to identify various groundfish species.

## **Purpose of the Project**

The purpose of the project is to create a fish identification manual. This manual will aid fish consumers with the task of proper species and fillet identification for various groundfish

species. The goal is to educate people so that they will have the necessary skills to identify common groundfish species on their own.

### **Objectives of the Project**

- To inform individuals about general groundfish fishing seasons and regulations.
- To promote a general knowledge of basic fish processing and filleting techniques.
- To make people understand that a fishery is a resource that needs to be regulated, conserved, and managed if it is to remain productive for years to come.
- To create a manual that aids consumers with basic groundfish species and fillet identification.
- To educate consumers with a general knowledge of groundfish and the role they play in the world economy.

### **Definitions of Important Terms**

- **Fillet:** cut or slice of boneless meat or fish (Webster Dictionary).
- **Fishery:** an entity engaged in raising or harvesting fish which is determined by some authority to be a fishery (Webster Dictionary).
- **Groundfish:** fish that live on, in, or near the bottom of the body of water they inhabit (Webster Dictionary).
- **Recreational Fishing:** also called sport fishing, is fishing for pleasure or competition. It can be contrasted with commercial fishing, which is fishing for profit, or subsistence fishing, which is fishing for survival (Webster Dictionary).

## **Hypothesis**

The average fish consumer does not have the proper knowledge to be able to accurately identify common groundfish species. A fish species and fillet identification manual would be very beneficial to these individuals. This manual, if distributed by fish markets or fish processors, would also help to reestablish the industry's fish labeling credibility.

## **Summary**

The problem is that people know nothing about the fish that they are consuming. They do not know the regulations that must be followed to legally harvest the fish, and they do not know how to identify the fish itself or the fillets that the fish produces. This lack of knowledge then leaves the consumer vulnerable to purchasing mislabeled fish at a market.

Mislabeled fish is sold all over the world, and a little fish identification knowledge would benefit fish consumers. A groundfish identification manual would also benefit any company selling fish whose reputation might be in question. The manual would benefit both fish consumers and producers.

## **Chapter Two**

### **Review of Literature**

The Groundfish Fishing Industry is a huge part of our global economy. “Around three billion people worldwide use seafood as a key source of animal protein,” (Asche, 2012, pg. 1). With this said, it is important for those who consume fish to have at least some understanding of what they are eating. Specifically, these individuals should know what the common groundfish look like and how to identify a specific species. The mislabeling of fish is seen as a very serious issue and is becoming increasingly common. “The identification of the fish species used in a specific preparation is a crucial step in food quality control to avoid possible commercial fraud,” (Pepe, 2007, p. 2). Consumers need to know basic groundfish species and fillet identification.

Groundfish are defined by where they live in the ocean. “Groundfish” are fish that live near the bottom or “ground” of the ocean. Species of groundfish include, but are not limited to, Rockfish and Halibut.

#### **Fishing Seasons (Central Management Area)**

Every area has different seasons in which rockfish can be fished for from a vessel. There are different management areas placed throughout California that designate the certain fishing zones. San Luis Obispo is located in the Central Management Area. “The Central Management Area lies between Pigeon Point (37°11' N. latitude) and Point Conception (34°27' N. latitude),” (California Department of Fish and Wildlife).

## **Summary of Groundfish Sport Fishing Regulations**

There are two different sets of regulations. The first set is designed for sport or recreational fishermen who pursue groundfish for fun without the intent to sell what they catch. There are also commercial regulations which apply to any person harvesting groundfish with the intent to sell. This summary will discuss some regulations that apply to the recreational fisherman. California Commercial Fishing regulations can be found at:

<http://www.dfg.ca.gov/marine/fishing.asp#Commercial>.

Rockfish can be pursued year round by both spear fishermen and shore based anglers. “Shore-based anglers are fishermen angling from beaches, banks, piers, jetties, breakwaters, docks and other manmade structures connected to the shore” (California Department of Fish and Wildlife). However, the season is only open May 1<sup>st</sup> to December 31<sup>st</sup> for boat based anglers in the Central Management Area. “Boat-based anglers are fishermen angling from boats or vessels of any size or any other type of floating object, including kayaks and float tubes” (California Department of Fish and Wildlife). There are a lot of regulations that an angler has to keep up with if they wish to legally pursue groundfish.

The next set of regulations are designed to regulate the size certain fish must be in order to keep, along with how many of that species you are allowed to harvest each day. Regulations may vary in different management areas. Here is a link to a regulation chart that California’s Department of Fish and Wildlife has provided:

<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=60272&inline=true>

There are too many fish to review individually, but some basics can be covered. For the Central Management Area, there is a limit of 10 rockfish per angler plus an additional two Lingcod. No more than three Cabezon and two Lingcod may be possessed in this limit. This

means that an angler can possess up to three Cabezon and two Lingcod-- but not anymore. So, a full limit of rockfish would consist of 10 assorted species of rockfish and two Lingcod-- a total of 12 fish.

Cabezon and Lingcod also have legal size requirements that they must meet. A Cabezon must be 15 inches long, and a Lingcod must be 22 inches long. Failure to abide by any of the size and limit regulations can result in serious charges and fines from the Department of Fish and Wildlife.

There are also several species of rockfish that are illegal to possess in California due to low population numbers. These fish include: Bronzespotted Rockfish, Canary Rockfish, Cowcod, and Yelloweye Rockfish (California Department of Fish and Wildlife). See The California Fish and Wildlife Saltwater Fishing Regulation Handbook, Section 28.55, for more information on these species. If any of these fish are accidentally caught, they must be immediately unhooked and released unharmed.

### **Fish Species Identification**

Some species of groundfish are easy to identify while others are much more difficult. There are a lot of different species of rockfish that look very similar. "Rockfishes represent a species and ecologically important group of marine fishes found in both the Pacific and Atlantic oceans, with approximately 105 species found world-wide (Hyde and Vetter 2007). They also comprise the majority of species found in the Pacific groundfish fishery," (Ewann, 2007, pg. 1). It takes years of experience for trained biologists to be able to distinguish between certain fish due to the simple fact that they look so similar. The average fish consumer most likely does not

possess advanced classification skills, but that does not mean that they cannot identify certain groundfish species.

For example, some fish, like the California Halibut, can be easily identified by their unusual shape and size. California Halibut have a flat sand colored body. See Figure 1.

**Figure 1: California Halibut**



Photo by Robbie Milla

Other species can be easily identified by their color, like a Vermillion Rockfish. Vermillion Rockfish are known for their incredibly vibrant red coloration. See Figure 2.

**Figure 2: Vermillion Rockfish**



Photo by Robbie Milla



## **Proper Fish Processing**

For those individuals who choose to catch their own groundfish, it is very important to process the catch correctly. Once the fish is landed, it needs to be kept cool. The fish should either be thrown on ice, kept cool in water, or stored in a cool shaded area away from the sun. It does not take much heat for a fish to go bad.

Once the angler has returned from their trip, it is time to process the fish. The most common way of processing local groundfish is by filleting the fish. This involves removing the skin and bones which leaves the angler with a piece of meat that is ready to be cooked without the hassle of bones or scales.

### **How to Fillet a Fish**

1. Start off by placing your knife right behind the head of the fish and cut down until you hit the fish's backbone. Make sure to not cut through the backbone.

**Figure 3: Initial Cut**



Photo by Michael Job

2. Next, angle the knife slightly so that a cut can be made down the backbone towards the tail end of the fish.

**Figure 4: Backbone Cut**



Photo by Michael Job

3. Once near the tail, do not cut all the way through.

**Figure 5: Cut to the Tail**



Photo by Michael Job

4. Flip the fillet away from the fish keeping it still attached to the fish by the skin on the tail.

**Figure 6: Flip Fillet Over**



Photo by Michael Job

5. Take the knife and cut down into the skin but not through it. Then, angle the knife slightly so that you can cut down the skin--separating the meat from the skin completely.

**Figure 7: Remove the Skin**



Photo by Michael Job



**Figure 8: Fillet Separated from Skin**



Photo by Michael Job

6. You can then remove the fillet from the remainder of the carcass and “de-bone” it by cutting away the bones so you are left with a boneless piece of meat. Most bones come from the rib cage of the fish and can easily be removed by making a single cut.

**Figure 9: De-Boned Lingcod Fillet**

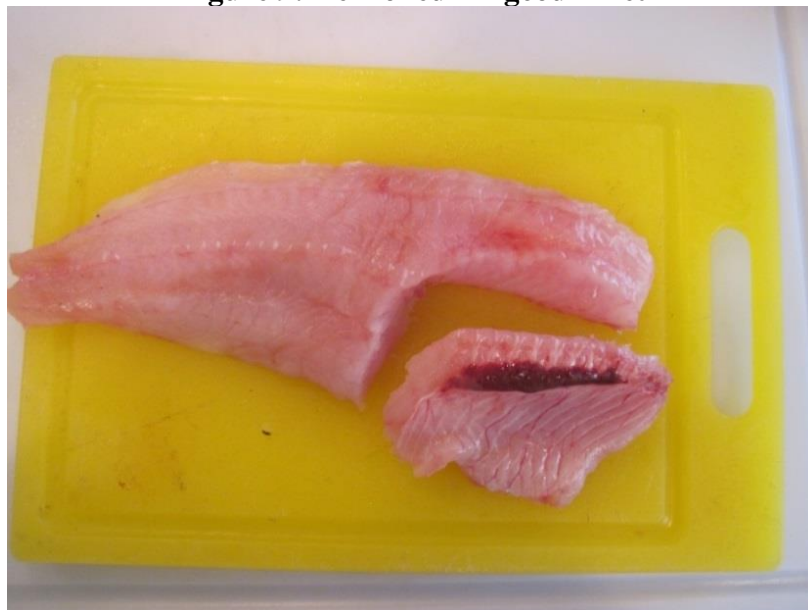


Photo by Robbie Milla

## **Fish Fillet Identification**

“In particular, for meat- or fish-based foods, methods able to differentiate and identify species commonly used must be developed. The necessity to identify different species in foodstuffs is an important aspect to consider when allergic problems toward specific species or ethical issues are taken into account,” (Pepe, 2007, p. 3).

When it comes down to it, the most accurate way to identify fish meat is by using a DNA test. The reason for this is that, once processed, a lot of fish meat looks almost identical. Just because a fish is red in color when it is alive does not mean that its meat is going to be red. Most fish meat is the stereotypical white color. The only way that some pieces of meat can be visually distinguished from one another would be by color, size, and shape. An example can be seen in the genetic variation in some Lingcod meat that makes it a blue color. This is concerning to some consumers, but it is completely harmless and the meat turns white again once it is cooked.

**Figure 10: Blue Lingcod Meat**



Photo by Robbie Milla

## **Marketing Fish**

The best way to market fish is to establish consumer confidence. The consumer needs to receive quality fresh fish; nobody wants to spend money on improperly labeled or poorly processed fish. If word gets out that a market is selling mislabeled fish, the market's credibility will drop significantly, and this will directly relate to a drop in customers. Fish have to be marketed as healthy and fresh.

## **Summary**

The ability to correctly identify fish species and their fillets is a good skill to have in a world where fish markets are consistently mislabeling their fish. This information is more easily learned when people fully understand where a fillet comes from and how the fillet is processed. Knowing the general regulations for managing these groundfish is also a good skill to have. The fishery is not bottomless; if not managed correctly fish populations will decline. It is the job of the consumer, who pushes the demand for the fish, to educate themselves in order to sustain the fishery.

## **Chapter Three**

### **Methods and Materials**

The ultimate goal of the project is to produce a manual that can help fishermen and fish consumers with species and fillet identification. The manual will focus on various local groundfish species. This project will also assist the fishing industry in restoring credibility relative to the proper labeling of fish. The most important outcome of the project will be to boost fish consumers' confidence in their ability to identify specific groundfish. The goal is to educate people so that they will have the necessary skills to identify these fish on their own. Steps that should be considered when creating a manual include: manual contents, quality photographs, gathering information, explainers, and manual formatting.

#### **Manual Contents**

The first step is to decide on the specificity of the manual. How many fish should be identified? What fish should be identified? What characteristics of the fish should be included? All these questions can be answered by looking at the needs of the audience. Very basic information should be used if the manual is trying to appeal to the average consumer. The average consumer would be someone who enjoys eating fish but is inexperienced when it comes to fish identification. More advanced information should be included if the manual is used as a guide for recreational or commercial fisherman.

Another element that needs to be considered is the geographic area. This will help choose what fish should be identified in the contents of the manual. For example, there will probably be a high emphasis on rockfish if the manual was geared towards saltwater fish in San Luis Obispo

County. There would probably be more emphasis on pelagic open water species such as Yellowtail if the manual was more specific to San Diego County. The abundance of various fish species fluctuates depending on the geographic location.

### **Fish Species to Include in the Manual**

A big decision that has to be made is: what fish should be included in the manual? Again, this question is easily answered by looking at the geographic area and the audience. Once area and audience are established, it is important that more common or popular species are featured in the manual. This includes fish commonly seen in the surrounding waters, along with commonly consumed in restaurants or sold in markets. Obscure and weird looking fish are always fun to see, but it would do the viewer little good if they were able to identify a fish that is rarely seen. An example of a commonly consumed fish would be the California Halibut.

### **Selection of Fish Species**

The best approach is to try and select fish that are most commonly found in a specific area. When choosing exactly what fish to include in the manual, it is best to try and get a general representation of the fish species in that area through just a few fish. It would be too overwhelming to try and include every fish that can be found in a certain habitat or specific geographic location. Fish selected from the Central Groundfish Management area would include: Lingcod, Cabezon, Red Rockfish, Grass Rockfish, California Halibut and Greenling.



## Quality Photographs

Once the level of specificity has been decided, the next step would be to start looking for quality photographs. These photos need to clearly show the identification techniques explained in the text. The old cliché *a picture is worth a thousand words* is true here. It is much easier to point out characteristics of a fish in a photograph than to try and explain physical descriptions with just words.

Trying to find a specific picture of a specific fish can be very difficult and frustrating. It may be beneficial to actually go out and take photographs of a live fish specimen. This way the key characteristics that are trying to be identified can be focused on with a self-taken photograph.

The photos are a very key component of the entire manual. They need to be excellent visuals to help the viewer try and learn basic identification skills. Extra care needs to be taken to ensure that none of the images are blurry. For a project of this sort, images with 300 plus DPI (dots per inch) should be used in all of the pictures. The following is an example of a high quality photograph of a Copper Rockfish: (See Figure 1).

**Figure 11: Copper Rockfish**



Photo by Robbie Milla

## **Gathering Information**

The manual should only include relevant information. Remember, the information that the manual contains should be crafted to a particular audience. Basic information should be used for beginners and more advanced information should be used for an audience with more experience. Beginners would be considered individuals with very minimal fishing knowledge and experience. More advanced individuals will have a good understanding of local fish along with advanced species identification skills.

Proper research techniques should be followed to ensure the credibility of the manual. It may be a good idea to conduct interviews with credible sources if it would enhance the quality of the manual. If information is used from outside sources, all of the material needs to be properly cited.

## **Explainers**

Every picture needs to have an explainer or some sort of text that better clarifies what is trying to be portrayed in the picture. An explainer is just a description of the image that is being shown. No picture should ever stand alone in the manual, no matter how obvious you think it is. Remember, just because it makes sense to you doesn't mean it will make sense to the reader. For example, instead of trying to describe the coloration and stripe pattern on a Treefish, it would be much simpler to just show a picture followed by the explainer. This would then allow the viewer to see the characteristics for themselves and then apply the text to the image.

**Figure 12: Treefish**



Photo by Robbie Milla

As noted in Figure 2, the Treefish can be easily identified by its yellow body and thick black stripes that run perpendicularly down its body.

### **Manual Formatting**

When creating the manual, it is very important to have the information depicted in a very clear and straight forward way. The goal is to teach an individual who has little to no knowledge of local groundfish species. It is best to try and avoid bombarding the viewer with information; keeping it simple is usually the best strategy.

Each fish should have sufficient space in the manual and not be crowded around other pictures. It is very important that the reader is able to focus on a picture and clearly read the relating text. If the manual is crowded or cluttered with pictures, it will distract the reader. Depending on the length of the document created, a table of contents at the beginning may be a good idea to help guide the reader through the manual. Again, the amount of information that the document contains is determined by the audience and how much information they are capable of retaining.

## **Summary**

The biggest take away point from the project is to always keep the targeted audience in mind. It is best to craft the manual to the needs of that particular demographic of people. Picking the correct fish for the manual is also very important. The best way to do this is by finding a few fish that represent a fishery as a whole. Once the fish are selected, it is important to obtain quality photographs of the fish. Quality photographs are essential to having a visually pleasing manual. No image should ever stand alone in the manual; every picture should be followed by an explainer that tells the reader exactly what the image is displaying. The final step is to format the document in a clear and concise manner. If all of these steps are followed the end result should be a very informative and visually pleasing project.

## **Chapter Four**

### **Results**

The purpose of this manual is to aid in the species and fillet identification of basic groundfish species found throughout San Luis Obispo County. Anglers and fish consumers can both benefit from being able to correctly identify various fish species along with the fillets that these species produce. This manual was also designed as an introduction to groundfish fishing regulations in California's Central Management Area. It is necessary for every angler to be able to correctly identify the fish that they catch in order to abide by the regulations set in place by California's Department of Fish and Wildlife. The following manual covers the most basic regulations and fish species.

# Central Coast Groundfish Species and Fillet Identification Manual

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Photo by Robbie Milla

By Robbie Milla  
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# Introduction

The purpose of this manual is to help recreational fisherman and fish consumers with proper groundfish species and fillet identification. There is also a fishing regulation overview to help familiarize the reader with some basic groundfish regulations.

This document focuses on the identification of various coastal groundfish species. The goal is to educate people so that they will have the necessary skills to identify common groundfish on their own.

Proper species identification is very important for fisherman if they wish to abide by sport fishing regulations. Most of the state's fishery laws require the fisherman to be able to correctly identify the fish.

Since most rockfish share a similar body structure, coloration is often a main characteristic that can be used to correctly identify these fish.



# Introduction to Groundfish Regulations

These regulations only apply to the recreational fishermen. Regulations are different for commercial fisherman. This is only a brief overview of some of the basic regulations. For more detailed information visit the Department of Fish and Wildlife's website:

<http://www.dfg.ca.gov/>

**Definition of Groundfish:** Fish that live on or near the bottom of the body of water they inhabit.

**Rockfish:** the category of “rockfish” applies to a variety of different fish. For example, an Olive Rockfish and a Treefish are both considered to be rockfish. However, species such as the California Halibut are considered to be groundfish but not rockfish. This concept confuses many anglers. Rockfish fall under the general category of groundfish as well.

## **Fishing Season**

- San Luis Obispo County is a part of the Central Management Area.

- The season for boat based anglers pursuing rockfish in this management area is from May 1st to December 31st.
- Rockfish may be harvested year round by shore based anglers and spear fishermen.

### **Daily Bag Limit**

- Each angler can catch up to 10 Rockfish and two Lingcod each day.
- Rockfish, Cabezon, and Greenling (RCG) fall under the Rockfish category.
- No more than 10 of these fish may be harvested each day.
- Two Lingcod may be harvested on top of the 10 RCG limit. So basically, an angler could legally catch up to 12 fish (10 rockfish and two Lingcod) to fill their limit.

### **Size Limit**

- Cabezon: 15 inches
- Lingcod: 22 inches
- Halibut: 22 inches
- Greenling: 12 inches

For more information on seasons, size limits, bag limits, and legal methods of take please visit:

[http://www.dfg.ca.gov/marine/sportfishing\\_regs2013.asp](http://www.dfg.ca.gov/marine/sportfishing_regs2013.asp)

# **Basic Groundfish Identification**

This manual focuses on a few commonly found coastal fish that an angler would be most likely to encounter.

There are hundreds of different species of rockfish swimming throughout the ocean. These rockfish species vary greatly depending on geographic location and marine environment. However, these fish are free to swim where they please, so although it is uncommon for them to break their normal habits, it is not unheard of.

Also, the fish identified in this manual are all mature fish. Most fish become much more difficult to successfully classify when they are juveniles.

Another aspect that should be understood is that many of these fish have different color variations. So, although color is a good way to identify some fish, it is not always completely accurate. Color should be looked at a starting characteristic when attempting to identify a fish, but should not be completely trusted.

# Vermillion Rockfish



Photo by Robbie Milla

- The Vermillion Rockfish is easily identified by its vibrant red color. Also often referred to as Red Rockfish.
- These fish typically inhabit deeper water.
- Bag Limit: 10 fish per day within RCG complex.
- No size limit.

# Black and Yellow Rockfish



Photo by Robbie Milla

- Black and Yellow Rockfish are often hard to identify because of their close relation to the Gopher Rockfish which look very similar.
- These fish are generally identified by their yellowish brown and black coloration.
- Bag Limit: 10 fish per day within RCG complex.
- No size limit.



# Gopher Rockfish



Photo by Robbie Milla

- The Gopher Rockfish is very closely related to the Black and Yellow Rockfish.
- It was thought that the Gopher Rockfish was just a color variation of the Black and Yellow Rockfish until genetic testing was done.
- Gopher Rockfish tend to have a lighter coloration when compared to a Black and Yellow Rockfish.

# Copper Rockfish



Photo by Robbie Milla

- The Copper Rockfish gets its name from its almost rusty copper looking coloration. Various shades of orange, red, and yellow are commonly found.
- Bag Limit: 10 fish per day within RCG complex.
- No size limit.

# Treefish



Photo by Robbie Milla

- The Treefish is easily identified by its black and yellow stripes that run vertically down its body.
- Treefish also have a pinkish peach color on their mouth and gills.
- Bag Limit: 10 fish per day within RCG complex.
- No size limit.



# Cabazon



Photo by Robbie Milla

- Cabazon can be hard to identify due to their many color variations. The picture above features the typical color, but they are also found in various shades of red and blue as well.
- The easiest way to identify them is by their big head and different body shape.
- Bag Limit: three fish per day.
- Size limit: 15 inches.

# Olive Rockfish



Photo by Robbie Milla

- Olive Rockfish are most commonly identified by their olive color and olive colored spots that run down their backs.
- Their fins often appear to be a yellowish color.
- Often incorrectly identified as a Grass Rockfish.
- Alternate names include Kelp Bass and Johnny Bass.
- Bag Limit: 10 fish per day within RCG complex.
- No size limit.

# Grass Rockfish



Photo by Robbie Milla

- The Grass Rockfish gets its name from its grassy or vegetative coloration.
- A lot of anglers consider them to be the most common shallow water rockfish in San Luis Obispo County.
- Alternate name: Kelp Bass or Kelp Rockfish.
- Bag Limit: 10 fish per day within RCG complex.
- No size limit.

# Brown Rockfish



Photo by Robbie Milla

- The Brown Rockfish gets its name from its brown coloration. This is really the only rockfish in this county that has these brown colors, so it should be fairly easy to identify.
- Bag Limit: 10 fish per day within RCG complex.
- No size limit.



# Greenling



Photo by Robbie Milla

- The first major characteristic that Greenling have are their vibrant colors. Greenling have bright yellow fins and a purple spotted body.
- Other identifiable characters include their long slender body and small mouths.
- Bag Limit: 10 fish per day within RCG complex.
- Size Limit: 12 inches.

# Lingcod



Photo by Michael Job

- Lingcod are probably the easiest fish to identify due to their large size, big teeth, and long slender body.
- Lingcod come in many different color patterns that range from a golden yellow, to blue, to a brownish white. Color should not be relied on when identifying Lingcod.
- Bag Limit: two fish per day.
- Size Limit: 22 inches.

# California Halibut



Photo by Josh Milla

- The California Halibut is an ambush predator that lies on the bottom of the ocean in primarily sandy areas.
- It can be identified by its flat sand colored body.
- The underside of a California Halibut is completely white.
- Size Limit: 22 inches.
- Bag Limit: five fish per day.

# **Introduction to Groundfish Fillet Identification**

The first thing that needs to be understood about fillet identification is that it is not a perfect science. There are certain traits that can be looked for when trying to identify a fillet, but unless the skin is still attached to the meat or a DNA test is used, there is no completely accurate way to identify a groundfish fillet. When it comes down to it, it is more of an educated guess based on observation.

One technique that can be very helpful is the actual shape of the fillet. If you know the shape of a fish, you know the general shape of what its fillet is going to look like.

For example, a Grass Rockfish is not going to have a long skinny fillet like Lingcod and Greenling do. Now, once a person can identify the difference between a Lingcod and a Greenling, they will know that a Lingcod fillet will be much larger than a fillet from a Greenling. Basically the processes of elimination and deductive reasoning are great tools when trying to correctly identify a fish fillet.



This portion of the manual is simply meant to equip the reader with some helpful tips and guidelines if they ever need to identify a fish fillet.

Although this manual should be useful, the best way to learn fillet identification is to personally catch and fillet a fish. There are concepts that simply have to be learned by an in the field experience. There are some aspects of fish fillets such as texture and consistency that can't be explained through the use of a manual; a hands on approach is the absolute best way to go.

It can also be noted that any fish whose name ends in "Rockfish" such as Vermillion Rockfish, Olive Rockfish, and Grass Rockfish are all going to have identical looking fillets. Since these fish have pretty much identical body structure, their fillets also have the same shape. These rockfish fillets will be more square or rectangular in shape.

# Fillet Knives



Photo by Robbie Milla

- When filleting a fish make sure to use a proper fillet knife.
- The use of a fillet knife will make the cleaning process much easier than if a normal kitchen knife was used.
- Fillet knives have long, slender, and very flexible blades.

# Properly Filleted Grass Rockfish



Photo by Robbie Milla

- This is an example of how a rockfish should look after it has been properly filleted.
- Notice how there is a clean cut all the way down the fish's backbone and there is no meat left on the carcass.
- **Note:** The yellow cutting board in all pictures is 12 inches long and 8 inches wide. This will give a good size reference for upcoming fillet pictures.

# Black and Yellow Rockfish vs. Lingcod Fillet

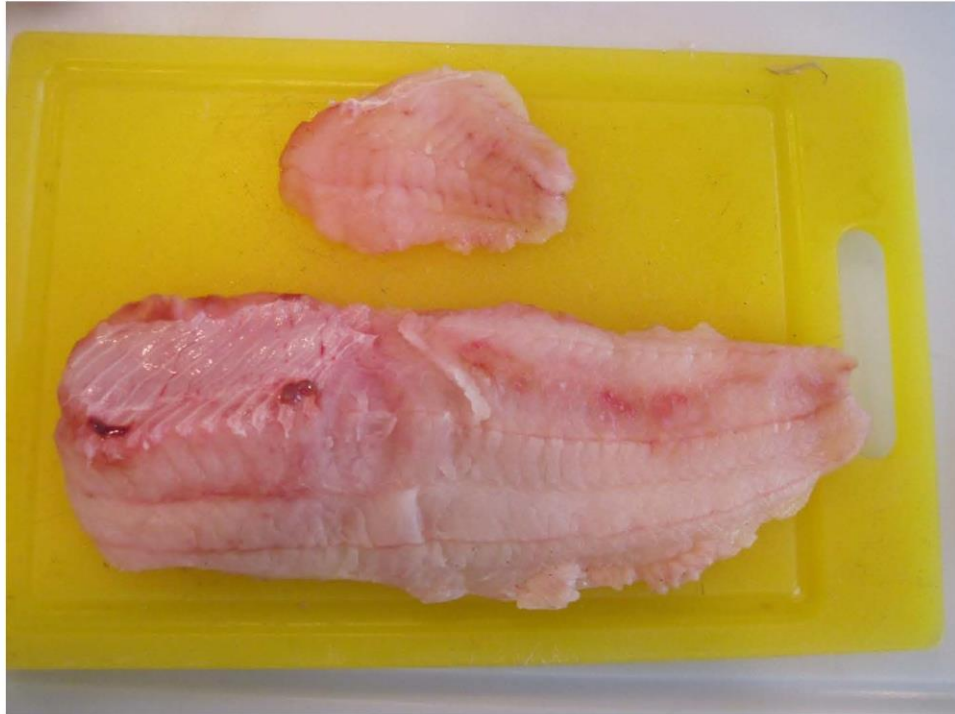


Photo by Robbie Milla

- The top fillet is from a Black and Yellow Rockfish and the bottom fillet is from a Lingcod.
- The first obvious difference between these two fillets is the size, but other than that, the actual texture, coloration, and even taste of the meat is going to be identical.

# Greenling, Grass Rockfish, and Lingcod Fillets



Photo by Robbie Milla

- Top left fillet is a Greenling, top right is a large Grass Rockfish, and bottom fillet is from a Lingcod.
- First of all, notice the similar square shape found in the Grass Rockfish fillet and the Black and Yellow Rockfish fillet from the previous picture. (Continued on next page).
- Greenling and Lingcod fillets are longer and more slender with the main difference being that Lingcod fillets are going to be bigger than the Greenlings. This is just because Lingcod are bigger fish.



# Greenling vs. Grass Rockfish Fillets



Photo by Robbie Milla

- Here is a shape comparison between a Greenling fillet (top) and a Grass Rockfish fillet (bottom).
- Notice the long slender shape of the Greenling fillet compared to the more square shape of the Grass Rockfish.

# Blue Meat



Photo by Robbie Milla

- Lingcod and Cabezon can have either white or blue meat; it is genetic.
- The blue meat is fine to eat and turns white when cooked.
- Blue Lingcod and Cabezon meat is generally not sold at fish markets because people are generally wary of the blue coloration in the meat.

# Conclusion



Photo by Robbie Milla

- The water surrounding the Central Coast of California is full of many different species of groundfish. This manual only covers a few of the most common species.
- In order to protect this diverse ecosystem, be sure to follow all Department of Fish and Wildlife regulations.
- These regulations are designed to keep the fishery healthy and to make sure it can be enjoyed by future generations.



## **Chapter Five**

### **Summary, Recommendations, and Conclusions**

#### **Summary**

The purpose of this project was to develop a manual that would help educate the general public on various components of groundfish fishing. These main components included: California Department of Fish and Wildlife Regulations, groundfish species identification, and groundfish fillet identification. If the manual is used it should be a great aid in learning about groundfish and the thriving groundfish fishery that can be found right off the Central Coast. Any individual who reads the manual needs to understand that it is just a broad overview of species and regulations and that there are many species of fish and regulations that were not covered. The manual was designed to target the most common species of fish that an angler would be most likely to encounter.

#### **Recommendations**

The following recommendations should be reviewed before attempting this senior project:

1. Don't make the manual too elaborate; keep it simple. In the future development of a manual of this sort, simply pick a few target species to include. There is an overwhelming amount that can be done with this project.
2. This project is always growing and is constantly going to be improved upon.

- As the project is being worked on, the process will prompt new ideas and additions to the manual. Work off of these ideas to help add to and improve the contents of the manual.
3. You can control the quality of the photos by taking them yourself.
- Taking your own photos not only gives you a sense of personal satisfaction, but it also allows you to key in on certain characteristics that you want to identify in a photo. It can be very difficult to find specific photos of fish; it is often much easier to go out and take your own pictures. The challenge that comes with this is being able to catch or find that one fish that you want a picture of. It can be a very time consuming process, so plan accordingly.

## **Conclusions**

The Central Coast Groundfish Species and Fillet Identification Manual should prove valuable to all beginning anglers. The completed manual has the ability to aid even the most novice anglers or fish consumers with groundfish species identification. The biggest success in this project was being able to acquire quality photographs that depicted certain qualities of various fish species. This identification manual uses quality photos that were taken within minutes of catching the fish. This is something that makes this manual stand out from all the rest. The manual clearly lays out some basic fishing regulations, focuses on the identification characteristics of certain groundfish species, and shows what fillets from these species look like. The intention for this manual was for it to be clear and easy to read. The author of the manual felt that all of the objectives in its development were met, but consumer feedback on the manual would be helpful for future editions.

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## **Appendix A**

### **Central Coast Groundfish Species and Fillet Identification Manual**

# **Central Coast Groundfish Species and Fillet Identification Manual**

**An Introduction to Saltwater Fishing in  
San Luis Obispo County**



Photo by Robbie Milla

By Robbie Milla  
© January 2014

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# Introduction

The purpose of this manual is to help recreational fisherman and fish consumers with proper groundfish species and fillet identification. There is also a fishing regulation overview to help familiarize the reader with some basic groundfish regulations.

This document focuses on the identification of various coastal groundfish species. The goal is to educate people so that they will have the necessary skills to identify common groundfish on their own.

Proper species identification is very important for fisherman if they wish to abide by sport fishing regulations. Most of the state's fishery laws require the fisherman to be able to correctly identify the fish.

Since most rockfish share a similar body structure, coloration is often a main characteristic that can be used to correctly identify these fish.

# Introduction to Groundfish Regulations

These regulations only apply to the recreational fishermen. Regulations are different for commercial fisherman. This is only a brief overview of some of the basic regulations. For more detailed information visit the Department of Fish and Wildlife's website:

<http://www.dfg.ca.gov/>

**Definition of Groundfish:** Fish that live on or near the bottom of the body of water they inhabit.

**Rockfish:** the category of “rockfish” applies to a variety of different fish. For example, an Olive Rockfish and a Treefish are both considered to be rockfish. However, species such as the California Halibut are considered to be groundfish but not rockfish. This concept confuses many anglers. Rockfish fall under the general category of groundfish as well.

## Fishing Season

- San Luis Obispo County is a part of the Central Management Area.



- The season for boat based anglers pursuing rockfish in this management area is from May 1st to December 31st.
- Rockfish may be harvested year round by shore based anglers and spear fishermen.

### **Daily Bag Limit**

- Each angler can catch up to 10 Rockfish and two Lingcod each day.
- Rockfish, Cabezon, and Greenling (RCG) fall under the Rockfish category.
- No more than 10 of these fish may be harvested each day.
- Two Lingcod may be harvested on top of the 10 RCG limit. So basically, an angler could legally catch up to 12 fish (10 rockfish and two Lingcod) to fill their limit.

### **Size Limit**

- Cabezon: 15 inches
- Lingcod: 22 inches
- Halibut: 22 inches
- Greenling: 12 inches

For more information on seasons, size limits, bag limits, and legal methods of take please visit:

[http://www.dfg.ca.gov/marine/sportfishing\\_regs2013.asp](http://www.dfg.ca.gov/marine/sportfishing_regs2013.asp)

# **Basic Groundfish Identification**

This manual focuses on a few commonly found coastal fish that an angler would be most likely to encounter.

There are hundreds of different species of rockfish swimming throughout the ocean. These rockfish species vary greatly depending on geographic location and marine environment. However, these fish are free to swim where they please, so although it is uncommon for them to break their normal habits, it is not unheard of.

Also, the fish identified in this manual are all mature fish. Most fish become much more difficult to successfully classify when they are juveniles.

Another aspect that should be understood is that many of these fish have different color variations. So, although color is a good way to identify some fish, it is not always completely accurate. Color should be looked at a starting characteristic when attempting to identify a fish, but should not be completely trusted.

# Vermillion Rockfish



Photo by Robbie Milla

- The Vermillion Rockfish is easily identified by its vibrant red color. Also often referred to as Red Rockfish.
- These fish typically inhabit deeper water.
- Bag Limit: 10 fish per day within RCG complex.
- No size limit.

# Black and Yellow Rockfish



Photo by Robbie Milla

- Black and Yellow Rockfish are often hard to identify because of their close relation to the Gopher Rockfish which look very similar.
- These fish are generally identified by their yellowish brown and black coloration.
- Bag Limit: 10 fish per day within RCG complex.
- No size limit.

# Gopher Rockfish



Photo by Robbie Milla

- The Gopher Rockfish is very closely related to the Black and Yellow Rockfish.
- It was thought that the Gopher Rockfish was just a color variation of the Black and Yellow Rockfish until genetic testing was done.
- Gopher Rockfish tend to have a lighter coloration when compared to a Black and Yellow Rockfish.



# Copper Rockfish



Photo by Robbie Milla

- The Copper Rockfish gets its name from its almost rusty copper looking coloration. Various shades of orange, red, and yellow are commonly found.
- Bag Limit: 10 fish per day within RCG complex.
- No size limit.

# Treefish



Photo by Robbie Milla

- The Treefish is easily identified by its black and yellow stripes that run vertically down its body.
- Treefish also have a pinkish peach color on their mouth and gills.
- Bag Limit: 10 fish per day within RCG complex.
- No size limit.

# Cabazon



Photo by Robbie Milla

- Cabazon can be hard to identify due to their many color variations. The picture above features the typical color, but they are also found in various shades of red and blue as well.
- The easiest way to identify them is by their big head and different body shape.
- Bag Limit: three fish per day.
- Size limit: 15 inches.



# Olive Rockfish



Photo by Robbie Milla

- Olive Rockfish are most commonly identified by their olive color and olive colored spots that run down their backs.
- Their fins often appear to be a yellowish color.
- Often incorrectly identified as a Grass Rockfish.
- Alternate names include Kelp Bass and Johnny Bass.
- Bag Limit: 10 fish per day within RCG complex.
- No size limit.

# Grass Rockfish



Photo by Robbie Milla

- The Grass Rockfish gets its name from its grassy or vegetative coloration.
- A lot of anglers consider them to be the most common shallow water rockfish in San Luis Obispo County.
- Alternate name: Kelp Bass or Kelp Rockfish.
- Bag Limit: 10 fish per day within RCG complex.
- No size limit.

# Brown Rockfish



Photo by Robbie Milla

- The Brown Rockfish gets its name from its brown coloration. This is really the only rockfish in this county that has these brown colors, so it should be fairly easy to identify.
- Bag Limit: 10 fish per day within RCG complex.
- No size limit.



# Greenling



Photo by Robbie Milla

- The first major characteristic that Greenling have are their vibrant colors. Greenling have bright yellow fins and a purple spotted body.
- Other identifiable characters include their long slender body and small mouths.
- Bag Limit: 10 fish per day within RCG complex.
- Size Limit: 12 inches.

# Lingcod



Photo by Michael Job

- Lingcod are probably the easiest fish to identify due to their large size, big teeth, and long slender body.
- Lingcod come in many different color patterns that range from a golden yellow, to blue, to a brownish white. Color should not be relied on when identifying Lingcod.
- Bag Limit: two fish per day.
- Size Limit: 22 inches.

# California Halibut



Photo by Josh Milla

- The California Halibut is an ambush predator that lies on the bottom of the ocean in primarily sandy areas.
- It can be identified by its flat sand colored body.
- The underside of a California Halibut is completely white.
- Size Limit: 22 inches.
- Bag Limit: five fish per day.

# Introduction to Groundfish Fillet Identification

The first thing that needs to be understood about fillet identification is that it is not a perfect science. There are certain traits that can be looked for when trying to identify a fillet, but unless the skin is still attached to the meat or a DNA test is used, there is no completely accurate way to identify a groundfish fillet. When it comes down to it, it is more of an educated guess based on observation.

One technique that can be very helpful is the actual shape of the fillet. If you know the shape of a fish, you know the general shape of what its fillet is going to look like.

For example, a Grass Rockfish is not going to have a long skinny fillet like Lingcod and Greenling do. Now, once a person can identify the difference between a Lingcod and a Greenling, they will know that a Lingcod fillet will be much larger than a fillet from a Greenling. Basically the processes of elimination and deductive reasoning are great tools when trying to correctly identify a fish fillet.



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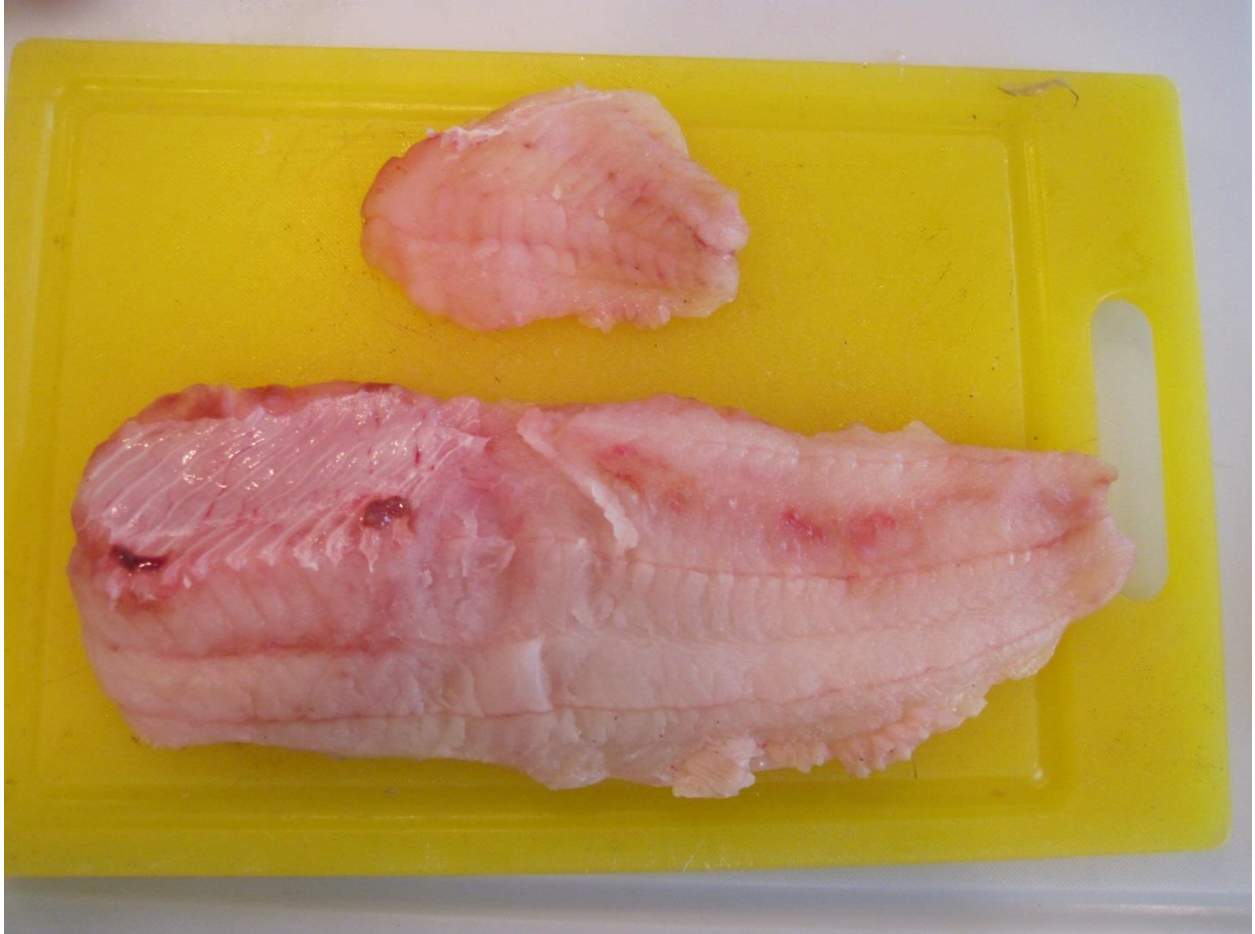


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